

UNITED STATES PATENT AND TRADEMARK OFFICE  
**CERTIFICATE OF CORRECTION**

PATENT NO. : 7,176,530 B1  
APPLICATION NO. : 10/803203  
DATED : February 13, 2007  
INVENTOR(S) : Bulucea et al.

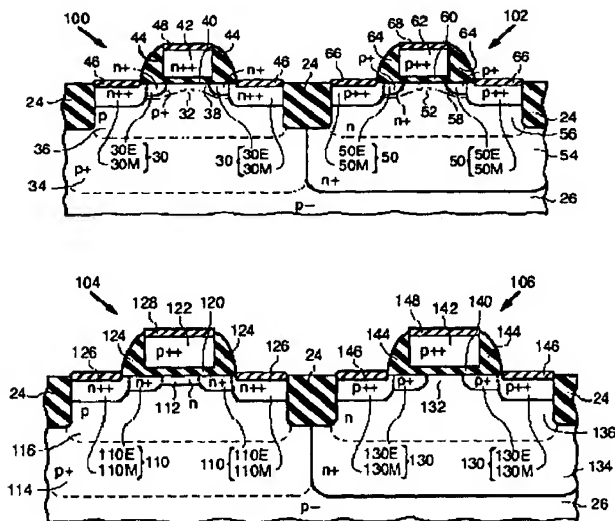
Page 1 of 2

It is certified that error appears in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

Delete the title page and substitute therefore the attached title page.

The title should read "SEMICONDUCTOR STRUCTURE HAVING N-CHANNEL CHANNEL-JUNCTION FIELD-EFFECT TRANSISTOR".

The drawing on the cover page should be:



This certificate supersedes the Certificate of Correction issued July 28, 2009.

Signed and Sealed this

Seventeenth Day of November, 2009

*David J. Kappos*

David J. Kappos  
*Director of the United States Patent and Trademark Office*

(12) **United States Patent**  
**Bulucea et al.**

(10) Patent No.: **US 7,176,530 B1**  
 (45) Date of Patent: **Feb. 13, 2007**

(54) SEMICONDUCTOR STRUCTURE HAVING  
 N-CANNEL CHANNEL-JUNCTION  
 FIELD-EFFECT TRANSISTOR

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OTHER PUBLICATIONS

(\*) Notice: Subject to any disclaimer, the term of this  
 patent is extended or adjusted under 35  
 U.S.C. 154(b) by 11 days.

Appels et al., "Local Oxidation of Silicon and Its Applications in  
 Semiconductor-Device Technology", *Philips Res. Rep.*, vol. 25,  
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(Continued)

(21) Appl. No.: 10/803,203

(22) Filed: Mar. 17, 2004

Primary Examiner—T. N. Quach

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(51) Int. Cl.  
 H01L 29/76 (2006.01)

(52) U.S. Cl. .... 257/369; 257/403

(58) Field of Classification Search .... 257/288,  
 257/350, 351, 368, 369, 371, 403  
 See application file for complete search history.

(57) **ABSTRACT**

(56) **References Cited**

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A semiconductor technology combines a normally off  
 n-channel channel-junction insulated-gate field-effect tran-  
 sistor ("IGFET") (104) and an n-channel surface-channel  
 IGFET (100 or 160) to reduce low-frequency 1/f noise. The  
 channel-junction IGFET is normally of materially greater  
 gate dielectric thickness than the surface-channel IGFET so  
 as to operate across a greater voltage range than the surface-  
 channel IGFET. Alternatively or additionally, the channel-  
 junction IGFET may conduct current through a field-in-  
 duced surface channel. A p-channel surface-channel IGFET  
 (102 or 162), which is typically of approximately the same  
 gate-dielectric thickness as the n-channel surface-channel  
 IGFET, is preferably combined with the two n-channel  
 IGFETs to produce a complementary-IGFET structure. A  
 further p-channel IGFET (106, 180, 184, or 192), which is  
 typically of approximately the same gate dielectric thickness  
 as the n-channel channel-junction IGFET, is also preferably  
 included. The further p-channel IGFET can be a surface-  
 channel or channel-junction device.

66 Claims, 24 Drawing Sheets

